The study of these phenomena involves the consideration of the exciting causes and of the associated pathological conditions.[1] Various theories have been offered in explanation. Sympathy with the uterus; congestive inflammation and great tenderness of the os and cervix in the latter months; some irritable conditions of the cervix; ulceration of the cervix; morbid irritation of the uterus, and inflammation of the deciduous membrane; distension and evolution of the uterine fibre or pelvic irritation; displacements and flexions of the uterus;[2] compression of the tissues of the uterus; absence of liquor amnii, allowing contact of the fœtus with the uterine walls; inanition, and gastric catarrh have all had their advocates, but no one of these hypotheses can be accepted as sufficient. In our case the conditions were associated with fright and extreme hyperæsthesia of the vulvo-vaginal canal as co-operating causes.

ARTICLE XV.

SUPRA-PUBIC LITHOTOMY; WITH THE HISTORY OF ONE SUCCESSFUL CASE.

By GEO. W. RACHEL, M.D., New York.

THE method of extracting a stone through an opening above the os pubis has of late found an ardent and able advocate in this country—Dr. C. H. Dulles, of Philadelphia. Since 1875 this gentleman has published several interesting articles on this subject, in all of which, I think, he has satisfactorily proven the preferability of the operation in question to that by perineal section. The following history will serve to give occasion for a few remarks on the subject, partly confirmatory of, and partly differing from, the views held by Dr. Dulles.

J. D., not quite five years old, was first presented at Prof. Jacobi's Clinic for Diseases of Children, College of Physicians and Surgeons, on August 14. His parents gave a history of bladder trouble, dating back at least two years. He had been examined for stone by several surgeons, but none had ever been found. For the last two months the boy's distress was intense; he was only able to pass a very few drops of urine at a time, and his agony before he could pass any quantity worthy of mention would last for fifteen or twenty minutes, sometimes even half an hour. His parents were extremely anxious to find relief for him as soon as possible.

No suitable instrument being at hand, I ordered him to come to my

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logical action of rectal alimentation, it is probable that Dr. Campbell has, in a measure, been anticipated by Dr. Robert Battey of Rome, Georgia, who submitted to the Surgical Section of the American Medical Association, at the meeting at Buffalo, a paper entitled "Permeability of the Entire Alimentary Tract by Enema, with some of its Surgical Applications," a synopsis of which was published in the October No. (1878, p. 551) of the *Virginia Medical Monthly*.

[1] Monro, Obsts. Trans. Edinb., vol. iii. p. 94.

[2] Ibid.

office. He came there on the 16th, and, after having put him under the influence of chloroform—a task that proved rather unpleasant for reasons to be hereafter stated—I introduced a steel bougie, No. 7, English scale. As soon as the point had reached the neck of the bladder, and before I had fairly begun to execute the upward and downward curve necessary to complete the introduction of a sound into the bladder, I felt the stone grating at the tip of the sound; the scratchy feeling was experienced while the sound was pushed further in, although indistinct, and was gradually lost. Dr. Lilienthal, who happened to be present, also convinced himself of the presence of a stone; the conclusion drawn about its situation was this, that very probably it was partially lodged in the prostatic portion of the urethra, just at the neck of the bladder.

On the 21st of August all the gentlemen connected with our Clinic, except Dr. Jacobi, who was absent from the city, convinced themselves of the presence of a stone in the boy's bladder. Again it was found that the tip of the sound grated upon the stone just as the hand commenced to turn it from its first position during introduction into that which is obtained after the completion of such introduction.. On the 27th of August, I extracted the stone in the presence of Drs. Gerster and Hubèr, of this city, and Dr. Dulles, of Philadelphia.

The anæsthetic used on this occasion was ether, because, as alluded to above, the chloroform narcosis asphyxiated the boy in the most alarming manner. Only by grasping his feet, and inverting his whole body, and by resorting to artificial respiration, could I succeed in resuscitating him. But the action of ether proved similarly disagreeable. As soon as Dr. Gerster, who was kind enough to take charge of the anæsthesia, gave the boy a dose sufficient to produce full narcosis, he became thoroughly cyanotic, with gasping respiration, and all the other signs of incipient asphyxia. The doctor was therefore absolutely unable to put the child fully under the influence of the drug; a semi-narcosis only was safely admissible. This was a difficulty I had to contend with during the operation, as we were not able to control his movements sufficiently. The bladder, before the operation, was washed out, by means of a double catheter, with carbolic acid, 1½ per cent. solution, and then moderately filled with the same. The catheter was then withdrawn, and a steel bougie No. 9, introduced, of which Dr. Dulles, who advised its introduction, took charge with his left hand. I then proceeded to operate, beginning with a pretty free external incision (2½ inches). After the bladder had been exposed, Dr. Dulles took hold of it with a good tenaculum, and depressed the steel bougie in his left hand so that its point showed itself plainly bulging up the anterior wall of the bladder. I then made the incision into the bladder, and immediately followed the knife with my left index finger, insinuating it into the opening so that only very little fluid escaped. As soon as I had thus prevented the bladder from collapsing I felt the stone whirling up against the tip of my finger. Without using any instrument, by a little manipulation I brought the stone out without the slightest difficulty. The peritoneum was not seen; hemorrhage was trifling.

The external wound was not a very neat one, in consequence of the restlessness of the boy, which made it impossible to keep exactly in the median line. It was closed by seven strong silk sutures. The vesical wound was not closed, but a double drainage-tube was inserted, such as first used by Trendelenberg, as I intended to try the abdominal position, first suggested and carried out by him. A small drainage-tube was also left in the external wound at its lower angle. The wound was dressed with cotton batting saturated with carbolic solution, which was poured on half-hourly. The reaction on the first day was considerable: 105° F. in the morning, but only 101½° in the evening; next day, 102°, but after this normal. To keep the boy in Trendelenburg's position proved an impossibility; in the first place, he would always, instead of lying so that the wound was between the two hair-cushions and over the vessel placed there, move upwards, so that the wound pressed against the upper cushion; and secondly, he would try to rise and turn himself on his back entirely. I therefore removed the tube from the bladder and put him on his back with the injunction to change off to either side as little as possible. On account of his pain and his restlessness, as well as to retard his bowels, I gave him tincture of opium 10 drops every four hours, and it acted as I have seen it act very frequently, although I do not recollect having seen the action mentioned anywhere else; it stimulated his appetite into complete voraciousness! Everything went on satisfactorily; on the third day the first urine escaped through the urethra, while on the eleventh day, at 3 P. M., he urinated in a full stream, missing the vessel his mother brought to the bedside, and flooding the middle of the room with the contents of his bladder. On the twenty-first day the wound closed, and the boy is in excellent condition at present.

The stone is a uric acid calculus weighing 44 grains. It is biscuit-shaped and one inch long. The constriction separating the two portions, however, is not in the middle, the length of one portion being 3‴ (and 4‴ broad), while that of the other is 9‴ (and 7‴ broad). This peculiar shape is in accordance with the fact that the stone was located at the neck of the bladder. The probabilities are that the smaller portion occupied the neck and the prostatic portion of the urethra, while the larger extended back into the bladder, occupying its base, the strongest fibres of the sphincter by their contraction prohibiting a free deposit, thereby producing the deep indentation (2½‴ diam.). The fact that the boy, during the last months, suffered terribly—incomparably more than during the preceding years—also supports this view. He was sometimes in great agony for thirty or forty minutes before he could pass his water, which, during the last months, always came in drops and never in a continuous stream.

I must, however, mention the fact that a stone of very similar shape, only twice as large, which I saw while looking up the different collections in this city, seems to a certain extent to contradict my theory in regard to the origin of this peculiar shape. It is the calculus No. 796 in the New York Hospital Museum, to which specimen there is a record in the printed catalogue (page 315), prepared twenty years ago by the late Dr. Robert Ray, Jr. There the stone is rightly described as "of an hour-glass form," and it is reported that "lateral perineal operation was performed and a great deal of difficulty experienced in extracting the stone, as it was partially encysted upon the anterior wall of the bladder and so tightly constricted that a knife had to be used to liberate it." I am sorry that this report does not state which portion of the stone was encysted, although I think that even the smaller is too large to have been lodged in the neck of the bladder; and, furthermore, if the latter would really have been the case, we should have certainly found it so stated in the report.

I have found, however, still another specimen in the same cabinet, which strongly supports my theory. The number of this specimen is 793, and its description (page 314) is given as follows: "The stone (which weighs 1 oz. 6 dr.) is somewhat oval in shape, and its section is beautifully marked by concentric lines of different colors. *The nipple-like process seen at one end projected into the neck of the bladder, while the concave curve behind it rested upon the bas-fond.*" This nipple-like process very much resembles the smaller portion of the calculus extracted by me; the fact that it is larger finds its explanation in the circumstance that the specimen was removed from the bladder of a man of 18 years.

I have dwelt on this point somewhat longer than might seem called for, because in two meetings of two different bodies of medical men I have encountered opposition in regard to my theory of the origin of this peculiar and rare form of calculus. The principal objection raised by several able colleagues was that the stone could not possibly have remained at the neck of the bladder, as it would then have been utterly impossible for the boy to pass water. The case from which specimen No. 793 has been derived does, I think, invalidate this objection.

In conclusion, I wish to say a few words about some details of the operation as well as about its merits in general. In regard to the preparatory treatment of the bladder, I would say that the best way seems to be the following: *Wash out the organ* with a lukewarm solution of carbolic acid (1 to 2 per cent.) by means of a double catheter and a syringe. As soon as this is done, fill it moderately, ascertaining its position by percussion, *and then withdraw the catheter, substituting for it a steel sound*, or, if this is possible, *i. e.*, if the urine is retained in consequence of the chloroform narcosis, *do not introduce anything at all per urethram.* This was done in another case operated upon by me, which forms the basis of an article by Dr. Dulles in the April number of the *American Journal of the Medical Sciences.* I fail to see the reason why Dr. Dulles in this article condemns the use of the double catheter, which he advised in his first paper on the subject. He does not give any, as far as I can see, and did not object to its use at the operation herein described.

The integumentary *incision* should be a *large* one, as should also that made in the bladder. In the perineum, of course, the surgeon is desirous to make the wound as small as is feasible, since slow twisting, working, and pulling will often bring out a stone through an opening originally apparently much too small for the purpose. This is not necessary here. The larger the incision the quicker and the easier is the extraction consummated. The danger of infiltration—of which more anon—is thereby hardly increased, if at all; the danger of cutting the peritoneum is, however, lessened, and for this reason: the higher up the incision is prolonged, the more likelihood will there be to reach the peritoneum by careful dissection, and when seeing it, trust it to a reliable assistant to keep it out of your way. The simple rule is that you only wound the peritoneum when it is hidden in the upper edge of the wound; find it, and you will not wound it. This rule, of course, applies more to adults, as the peritoneum in children covers much less of the anterior surface of the bladder than it does in the former. Lastly, the incision preferable in adults is the one parallel to the os pubis, and this may also be made pretty free without especial danger to the peritoneum on either side.

The cut into the bladder as first practised by Gunther is, according to my experience, the quickest, and at the same time the safest. Although Dr. Dulles makes it a special point that the bladder should be secured with a good tenaculum, and the point of the sound should be raised, and on it the incision commenced, I have the impression that it is just as safe to follow up the incision with the left forefinger. The latter (and not the stone) blocks the opening and prevents the escape of the fluid and the collapse of the organ. But even if the incision should be so large, that the fluid would find its way out, the finger in the bladder would suffice to prevent its complete collapse, and it could never be lost so as to cause serious embarrassment. Indeed, to my mind this feature of the operation illustrates better than any other its grand simplicity. No sound, no tenaculum, no stone-forceps: the finger—*the best instrument*—taking their place, and taking it successfully!

But, even if the finger, for some reason, should fail to extract the stone—although every calculus not too large and not encysted must and will be whirled up against the operator's finger—the secondary introduction of a stone-forceps or Günther's stone-spoon is a matter of little or no difficulty.

As regards after-treatment, I would say that the question, whether *to sew up the wound or not*, is still an open one. Günther, it is true, has had excellent results as compared with all previous statistics, perineal and supra-pubic, while leaving the wound absolutely untouched after the extraction of the stone. Yet, I am aware that several surgeons, among them Lotzbeck, Bruns, and Starr, during the last few years, have successfully sewed up the wound tightly, bladder and all, in one contiguous Lambert suture. I think that a surgeon thoroughly experienced in Lister's antiseptic treatment is fully justified in closing the wound in the bladder with cat-gut, and the external wound with an antiseptic silk suture.

As to *injections* after the operation to remove plugs of pus, mucus, and clots, I think they are justly condemned by Dr. Dulles, because they always require a gentle force, and even the gentlest under the circumstances is an undue force. Even when the wound is not closed by sutures, but left entirely to itself, I would advise against their use.

Catheterizing is necessary when the wound is tightly closed; otherwise it is superfluous, and the urine flowing over the wound does little harm, if any, because it has no time to decompose.

Warm baths, frequently repeated, have found an able and persistent advocate in Günther. I cannot say much about them, except that they may perhaps retard the agglutination of the tissues in the healing process, and as patients under equal conditions get well with, just as well as without them, I would not insist upon their use. Besides, they require considerable moving and handling of the patient, which perhaps might just as well be spared him; for the efforts which he involuntarily makes, when lifted, etc., always tend to contract his abdominal muscles, a thing specially to be avoided. A dose of opium, regularly continued, is a good preventive of the evil tendency just described, to which children by their natural vivacity are peculiarly liable.

A rapid survey of the advantages of the supra-pubic method recalls the following points:—

1. *A* ridiculously *small armamentarium.* (In average cases a pocket-case suffices.)
2. *Easy approach to the interior of the organ.* (A large wound, not a deep wound.)
3. *Easy apprehension of the calculus.* (No groping in the dark.)
4. *Easy extraction of the same.* (No pulling, tearing, twisting, dilating, lacerating, etc.)
5. *No destruction of important organs.* (No impotence, no sloughing of rectum, etc.)
6. *No hemorrhages* (neither during nor after the operation; only 2 out of over 500 cases on record, neither of which was fatal).
7. *No fistulæ* (of whatever description). It might be added that this is the only method of lithotomy where Lister's dressing may be fully applied, if the wound is sewed up (see above).

I think that these numerous advantages, almost every one of them a vital one, more than counterbalance the few disadvantages of this method that are again and again urged by its opponents, although having again and again been proved to have been always overrated.

I would like to divide these according to the stage of the operation in which they happen. During the operation there is a possibility of (1) *Protrusion of intestines*, and of (2) *Cutting into the peritoneum.* After the operation you have to fear (what just as frequently happens after perineal section), (1) *Peritonitis* and (2) *Urinary infiltration.* Dr. Dulles has shown that the fear of all this is, for the most part, imaginary. Of over 500 cases there was—

Protrusion of intestines in 13 cases, and of these 3 died.
Cutting of peritoneum in 14 " " 4 "

And furthermore—

General fatal peritonitis in 6 "
Urinary (fatal) infiltration in 7 "

I think that a careful perusal of this short review of the salient points *pro* and *con* in the discussion, concerning the merits of the "high operation," may perhaps encourage some of our readers to give this method a trial. All the advantages urged for the median operation are equally present in the supra-pubic. In children, at all events, this method is, it seems to me, *the* operation. Of recent operations, the one successfully performed by Dr. Starr, on a man weighing 200 pounds, a description and analysis of which Dr. Dulles gave in the *Amer. Journ. of the Med. Sciences* for July, 1877, is, I think, typical. The time is at hand in which such cases ought to be operated above the pubes *from the start, and not only after extraction through the perineum has failed.* Supra-pubic lithotomy is no "dernier ressort;" it is a first-rate operation, and ought to be recognized as such.

ARTICLE XVI.

ON FRACTURES AT THE LOWER END OF THE RADIUS.

By JOHN H. PACKARD, M.D., Surgeon to the Episcopal Hospital, Philadelphia, Pa.

(Read before the Surgical Section of the American Medical Association, at Buffalo, 1878.)

MORE than one hundred years ago, the distinguished French surgeon Pouteau wrote that fractures of the radius in the vicinity of the wrist, caused by falls on the hand, "are generally mistaken for sprains, for incomplete luxations, or for separations between the ulna and radius." This statement, which contains the germ of the modern ideas on this subject, seems to have had no influence at the time, and to have come to light again only as a matter of history.

In 1814 Colles, of Dublin, published in the *Edinburgh Medical and Surgical Journal* so clear and philosophical an account of these fractures as to have held its own, with scarcely any important modification, to the present day. His very modest article, however, attracted but little attention until brought into notice and enlarged upon by Mr. Robert W. Smith, also of Dublin.

Dupuytren followed, in a paper of uncertain date, but expressing views which must have been developed between 1819 and 1829. He was either unaware of Colles's publication, or chose to ignore it. What is still more remarkable is, that in 1847, Malgaigne, a very scholarly and comprehensive reader, and better acquainted than most of his countrymen with foreign books and journals, also passes over in silence the fact that Colles had written on the subject. Neither Voillemier nor Nélaton make any reference to it. These facts, however, need not surprise us so much when we note that Sir Astley Cooper makes no mention of Colles's name, and that it is barely alluded to by Fergusson. A long list of other names might be quoted did space permit.